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EUROPEAN FORESTRY-METHODS AND PRACTICES-
AND HOW THESE METHODS CAN BE APPLIED
TO SOUTHERN FORESTS

By
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EUROPEAN FORESTRY - METHODS AND PRACTICES - AND HOW

THESE METHODS CAN BE APPLIED TO SOUTHERN FORESTS.

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There naturally arises in the mind of the American who sees or reads of the highly productive forests of Central Europe, the question - what is there in European forestry that can be applied to advantage to the great wealth of forest soils in the United States? To one acquainted with the great area in the aggregate of cutover and burned over poorly producing forest land in this country there is indeed a striking contrast with most European forests. There, almost every available acre of forest land is kept productive in much the same way as every acre of cultivated land is made to produce its maximum of tilled crops. Idle or abandoned land is almost unknown. The words "soil erosion" as we know them in this country are relatively foreign to the vocabularies of Central Europe. It makes little difference in Germany or Sweden, for example, whether commercial forest lands are publicly or privately owned; they are, for the most part, equally well managed. Sustained yield is the common practice. Forest industries on the whole are stable and permanent. Forest resources are looked upon as indispensable assets essential to the common welfare. Forestry ranks high among the professions. It would appear, therefore, that Central European countries should afford a wealth of ideas for application to improve our forestry practices in this country.

One might suppose, for example, that a chief reason for the wider application of forestry in Europe is the greater advancement in methods of timber growing or silvicultural practice as compared to the United States. Many a German forstmeister will endeavor to convince you that the superior results on his forest are due to the deft application of his particular modification of some one of the dozen or more so-called systems of silviculture which have been developed in that country. There is no doubt that some one system of stand management often will afford better results for each particular condition than some other system, or that good silviculture is an essential tool in good forest stand management. However, the results of any one system as compared to another, in the main, differ only in degree. All are modifications of two fundamental systems, clear cutting and partial cutting, with necessary steps to assure regeneration either by natural reproduction or planting. Their application depends upon local conditions. Likewise in this country, forest growing practices will have to be developed for the local conditions to be met. Many of the general principles of silviculture developed in Europe are applicable in American forests, but the details must be worked out for the species, climate, soils, and economic conditions of the locality. On the whole, however, silvicultural

systems are chiefly incidental to certain more fundamental reasons why the practice of forestry is much further advanced in Europe.

Social and Economic Conditions

It has been an outgrowth of physical, economic and social circumstances. Many of these circumstances we wish to avoid and to the extent we can avoid their permanent development we will not have the same conditions surrounding the practice of forestry. On the other hand, it is only by the development and application of sound forestry practice and the proper use of all our natural resources that we shall be able to avoid many of the social and economic conditions that we wish to have remain foreign to American life.

One of the outstanding conditions favorable to the practice of forestry in many of the European countries is the shortage of raw materials or of land on which to produce them. In Germany, for example, there is an average population of 361 persons per square mile as compared to an average of 41 persons per square mile in the United States. Forest land amounts to less than one-half acre per capita in Germany and 5.3 acres per capita in the United States. There is an average of 0.8 acres of tilled land per capita in Germany as compared to 3.4 acres in the United States. Particular reference is made to Germany because that country is generally recognized as the cradle of forestry. It is obvious, without going into the relative productivity per unit of land in the two countries, that the tremendous population pressure on the land in Germany creates a demand for all the wood that can be produced, even down to the last twig in many places. Germany, in addition to its own production, in the past has imported 25 to 35 percent of her wood requirements. This demand, together with the close use of raw materials, naturally has fostered intensive utilization of the available land, including intensive timber growing practices. Coupled with the ready market and close utilization of the wood grown is the relative abundance of poorly paid labor. The whole combination of circumstances has created conditions favorable to the most intensive use of land for timber growing.

A somewhat similar situation has prevailed for a long time. Even before the country became so densely populated there was a shortage of raw materials on much of the readily accessible land. This grew in part, out of the excessive cutting without attention to regrowth several centuries ago, which resulted in an actual shortage of wood available under the existing systems of transportation. Although some of the early forestry laws and some of the first efforts toward forestry date back to the thirteenth century, a critical situation developed following the Thirty Years War ending in the middle of the seventeenth century. This greatly stimulated interest in restoration of the timber resources, but systematic forestry did not really get under way until the latter part of the eighteenth century. Thus, it is apparent that the practice of forestry in Germany grew out of a prolonged struggle against the shortage of resources and the shortage of land.

Limited land and resources have instilled in the minds and hearts of the European people a reverence for the soil, whether used for farm or

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forestry. For example, in speaking of some farm lands protected from floods by reforested watersheds in France, Inspector General of Forestry and Water, M. Albert Magnein, casually mentioned in an address before the Upstream Engineering Conference in Washington in September, that these acres were "cultivated with affection by the present inhabitants". This regard of land on the part of the owner or tiller of the soil throughout Europe has been a material factor in the creation of a public sentiment favorable to conservation and opposed to wasteful use of natural resources.

A similar attitude is largely lacking among the people of the United States and the general practice of proper land management, including forests, will be slow to develop until individual land owners are far more conservation conscious than they are today. A real test of American resourcefulness is whether or not we can develop land management practices that will sustain the social economy we are striving for, and avoid the social and economic circumstances which have fostered the practice of forestry in Europe.

In America, of course, we have not reached the condition of land shortage or of a general timber shortage that now exists in many European countries. These are among the circumstances which we wish to avoid. We have ample resources to meet the requirement of a material increase in population. The chief need is that we reverse the process of inefficient use and wastage of our present and potential resources, lest they be reduced below the requirements for maintaining an acceptable standard of living for our present or potential population. The lesson we may learn is that we must develop a forestry practice that will avoid the circumstances of limited resources and cheap labor rather than to follow the course of coming to practice forestry only when a lowered economic plane makes it simpler to do so. In other words, the mere fact that social and economic conditions are different does not remove the necessity of steadily advancing our forest practices,

So much for the general social and economic background in relation to the practice of forestry. There are, however, certain other suggestions to be gained from European forestry which are of more or less value in developing forestry practices in our country, to which brief reference will be made.

Correlation of Land Use and Industry

Of especial interest is the recognition given to forest resources as a part and parcel of the economic foundation of communities. Forest land and forest resources have a leading place along with agriculture and other industries in supporting local population. Whenever possible, all resources and industries are integrated so as to afford the greatest benefit from all sources combined. An outstanding example is the interrelation of farming and forestry. Subsistence agriculture as a source of living with part time work in the woods has been well developed in many localities. Much the same is true of the tourist industry and forestry. This has not been the result of planning or design, perhaps, but has come about as the natural result of the necessity of making the best possible

use of all the resources in the struggle for subsistence of the people. Regardless of its origin, however, it is practical and appears to have its place in any community. In America the tendency has been to develop forest industries, agriculture or other related enterprises independent of each other. Only recently have we begun to think of practical integration and a big opportunity that lies ahead in developing existing possibilities of correlation.

Diversity of Production and New Uses for Wood

Diversity of production, or using each class of raw material from a given forest area for the purpose to which best adapted has been an important factor in obtaining higher returns from forest lands in Europe. Careful attention is given to classifying the material so that each kind is sold for the purpose which will bring the highest return. The larger sized material only goes for saw logs, or similar appropriate uses; thinnings and other smaller diameter trees are used for pulpwood, poles, posts, and similar products. The inferior wood, tops and limbs find a market for fire wood, charcoal, etc. Material suitable for veneer or other specialty purposes likewise is disposed of accordingly. This close utilization obviously requires a diversity of forest industry to provide an outlet for all classes of material. Only the higher grade raw material, such as high grade saw logs or veneer stock, can be economically transported long distances to milling plant or market. The bulkier materials must be utilized or manufactured locally.

It seems likely that a similar practice is going to be necessary in the South to make possible the most profitable use of forest land. For example, it is extremely doubtful that land can be used for the production of saw logs alone, with the consequent financial loss from cutting trees of small diameter and leaving portions of tops or other material in the woods. It seems probable also that handling a forest for pulpwood alone will not yield the best results in the long run. In other words, dual purpose forestry which yields a variety of products doubtless is going to be found the most profitable.

The necessity for this closer utilization in the South calls for the development of new local industries in many localities. The advent of paper mills is a highly desirable move in this direction, provided the swing is not entirely to pulpwood so that on land best suited to diversified products, saw log production is left out of the picture.

We cannot expect to come to the point of the extremely close utilization now found in parts of Europe. However, there is much room for improvement, especially through the development of new industrial uses for low-quality material. More attention should be given to research along this line. It is interesting to note in this connection that in such countries as Germany and Sweden, where we have considered the problem of utilizing low-grade material pretty well solved, that particular emphasis is now being given to the economical development of new uses for these products. One prominent German forester stated that finding a way to utilize low-grade wood more profitably is the biggest problem confronting

forestry in the Reich. There is a much greater margin for opportunity along this line in the United States.

Sustained Yield

Continuous forest production or sustained yield is recognized in European countries as the only means of maintaining forest dependent communities. Although the private owner recognizes the public trust involved in the management of his timber land, he considers sustained yield as being in his own interest as well. To the question asked of a Swedish forester: Why do the corporations owning and operating timber land not cash in on all their merchantable timber in times of good prices, came the reply that the stockholders are not interested in liquidating their assets, but look upon their investments as a source of income, not only for the present but for the future as well, and the management of the company must apply this policy. In other words, sustained yield on forest lands is essential to a sustained income to the stockholders. Although national laws in most countries establish certain minimum requirements in the handling of private forests, most of the large operators manage their lands far better than the law requires, because it is in their own interest to do so. This is true even in Sweden where labor costs, and other factors, compare favorably with conditions in this country.

Distribution of Age Classes

One of the points given emphasis in European forestry is the proper distribution of age classes of trees in each operating unit. This is especially significant in the practice of sustained yield. If proper age (or size) class distribution is attained, and then maintained, sustained yield becomes almost automatic. There is less working in the dark, so to speak, and less tendency to over cut. One of the greatest difficulties the South has to meet is to bridge the gap between the present stage of abundant immature second-growth and the shortage of an ample quantity of older age classes on most timber units. Unless due regard is given to developing proper distribution of age classes, including growing stands to saw log size, on forest lands tributary to the new paper mills in the South, the region will not derive the stability or amount of income from the timber lands that are possible or desirable.

Silviculture

Of particular interest in certain of the European countries at present is the strong trend away from the old systems of silviculture. For many years the practice was to grow pure stands, especially of pine or spruce, depending upon the site, to clear cut and then replant. This practice has proven detrimental to the soil, resulting in a decline in yield in each succeeding rotation. Hardwood mixtures are being restored, because hardwoods facilitate decay of litter and reduce the accumulation of raw humus. Hardwoods are thought also to bring certain mineral elements to the surface soil through the leaves which are shed annually. Planting is giving way more and more to natural reproduction wherever it is possible to obtain it, although regeneration by natural reseeding is said to be little less expensive than replanting because of the longer interval required

for natural reseedling. Incidentally, excessive game population in Germany is a distinct handicap to natural regeneration, especially of hardwoods, in many localities. The trend also is away from clear cutting toward partial cutting, because the latter system favors the soil. The aim is distinctly toward a natural forest condition which Swiss, German, and Swedish foresters all agree, helps to maintain the productivity of the soil.

Advancement is also being made in planting practice. It required a long time for the Germans to learn the importance of source of seed for planting purposes. Because of the use of seed from stands grown under conditions unlike those where the planting is being done, many poor quality stands have been established. Laws now provide that seed offered for sale must be certified as to source and quality, in order that the purchaser may be aware of the conditions where the seed was grown. Only those stands which meet rigid requirements may be certified for seed production. In view of the extensive planting now under way, source of seed is a matter to which much more attention should be given in the United States.

Grazing, especially in hardwood forests, but also with the coniferous species easily damaged by grazing in the reproduction stage, has been a bane to forestry in most European countries. This is especially true where prescriptive rights became established, since they are difficult to dislodge. Usually the grazed woods are neither forest nor pasture. This problem is gradually being worked out by selecting suitable areas, clearing them, and establishing improved pasture. The livestock are then excluded from the forest land and confined to the improved pasture to the benefit of both the livestock and the forest.

Farm Forestry

Much less progress has been made on farm forests than on the more strictly commercial forest lands in the Central European countries. In Germany, for example, the average annual net growth on the former is under 30 cubic feet per acre, as compared to around 75 cubic feet per acre on the latter. This, in part, is due to the different object for which farm forests are handled and partly to the difficulty in getting the small farm owners to apply good forestry practice. Even the forest laws of the several countries are less well enforced on farm wood lots. The best results on small holdings are obtained under cooperative or association management. In numerous instances small forest land owners have banded together and pooled their holdings so that all are handled as one forest, or working circle. This makes possible the employment of a forester and the application of a sound cutting plan. Each owner or share holder receives his proportionate share of the income each year regardless of the portion of the cooperative forest the cut comes from. Under this system, small owners enjoy the same benefits of forest management as the larger forest land owner.

Cooperative Marketing

As in the United States, the small owner or farmer has his difficulties in marketing when he tries to stand alone. Cooperative associations are

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making strong headway in the solution of this problem in Sweden. Shortly after 1920, silvicultural associations were formed among the small owners in a number of Swedish provinces. At first their main purpose was to promote better forestry practice. However, it was not long before the opportunity to utilize the organizations for marketing was recognized. Now practically every province has a strong marketing association and a national union of marketing associations has been formed. A fairly large proportion of the small owners belong to the association. Each association has a personnel, qualified to know what products the association members have to sell, and what the market demands and prices are, who handle the marketing. In this way the members of the association get the best market price for each commodity, which was not the case before the associations were formed. The manufacturer is also better served because he can deal with a single agent, instead of with a great many individuals, or through a middle-man. The timber cooperatives are growing and the aim is, since a large share of the timber in Sweden is held by small owners, eventually to exercise a real influence in establishing the price level for raw forest products.

Political Influence

Much has happened politically in European countries in recent years. Governments now vary from the democracies, such as Switzerland, Sweden, and France, to the Nazi, Fascist, and Communistic dictatorships. Yet forestry goes forward in every country, almost regardless of politics. The practice of forestry is something that transcends political upheavals. Practically every country has its forest laws, establishing a reasonable public control over the use of all forest land. Even in Switzerland, where most legal rights are reserved by the cantons, national control over forest lands was established by popular vote. Thus in Europe, where there is greater incentive for the private practice of forestry than in the United States, there is state or federal regulation of private forest lands. This arises out of recognition of the fact that forest resources are of public interest, that because of the long time required to grow a timber crop, the public can not risk neglect of privately owned land that will lead to circumstances unfavorable to the public interest, and because even where forestry is profitable, without public watchfulness, a few owners may manage their properties in a manner detrimental to the interests of the many.

Some of the major points of interest in European forestry are summarized as follows:

1. Certain social and economic conditions, especially shortage of raw materials and poorly paid labor, which we wish to have remain foreign to this country, have aided the development and application of intensive forestry practices in parts of Europe. We need to develop forestry practices suitable to our needs in order to avoid these conditions.

2. Among the favorable factors which have promoted good forestry in Europe are:

- (a) Widespread recognition of forest land as an integral

part of the resource base, and giving it commensurate consideration.

(b) The necessity of continuous forest production for sustaining dependent communities, as well as sustaining the income of private forest land owners.

(c) Intensive utilization of forest lands by growing and manufacturing a diversity of products, in order that each class of material produced on a given area may be marketed to best advantage.

(d) Proper distribution of age classes for each operating forest unit plays an important part in attaining continuous forest production. This is a problem of special interest in such places as the South where second-growth lacks diversity of age classes.

3. Silvicultural systems of Europe afford excellent examples of what may be done under intensive practice, but these systems cannot be transplanted bodily to other conditions. Forest practices need to be developed locally in accordance with local economic, climatic, and soil conditions, although certain general principles developed elsewhere will serve as general guides in the South, as well as elsewhere in the United States.

4. Cooperatives are being developed with apparent success in an attempt to solve the marketing problem for farmers and other small woodland owners in Sweden.

5. The public interest in the proper management of privately owned timber lands is practically taken for granted by both the owner and the public. In view of the public interest involved, public regulation is made possible through the general application of public forest laws. Public forest regulation exists in practically all countries, regardless of political system, and forestry continues to go forward regardless of political system.

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